

The Genus *Zulubius* Bergroth (Heteroptera: Alydidae)

by

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The African genus *Zulubius* Bergroth and the species, *Zulubius maculatus* (Thunberg), are redescribed. *Zulubius acaciaphagus* is described as new. Both species, including the genitalia, are illustrated.

INTRODUCTION

The genus *Trichocnemus* was described by Stål (1873) to accommodate *Alydus maculatus* Thunberg which Stål (1865) had originally placed in his genus *Nemausus*. Bergroth (1894) noted that the name *Trichocnemus* was preoccupied and proposed the new name *Zulubius* for the then monotypic genus.

Very little has appeared in the literature regarding *Zulubius* during this century. Schouteden (1938, 1948) reports on the occurrence of the genus in Zaire and Lindberg (1958) records it from the Cape Verde Islands.

An undescribed species has been collected during recent studies in South Africa on insects associated with acacias. This new species is described herein so that it will have a name for use in forthcoming reports.

Genus *Zulubius* Bergroth

Zulubius Bergroth, 1894:547 (new name); 1913:162 (cat.); Schouteden 1938:302 (note).

Trichocnemus Stål, 1873: 91, 95 (orig. desc., cat.); Lethierry and Severin 1894: 112 (cat.); Bergroth 1894: 547 (nom. preocc., synonymy).

Type-species: *Alydus maculatus* Thunberg, monobasic.

Members of the genus are characterized by being somewhat linear and flattened in general body form; the hind tibia bears a single spine at apex and two parallel rows of spines, on underside, one row with prominent spines, the other with short and inconspicuous ones; first tarsal segment somewhat longer than combined lengths of second and third segments; length of the fourth antennal segment approximately equal to combined lengths of II and III; and the posterior middorsal region of genital capsule with a knob-like process.

Head: Generally flattened, large minutely and variably granulate, especially above; tylus more or less flattened laterally at apex, extending slightly anterior to base

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of rostrum; eyes reaching pronotum, slightly recurved around anterior pronotal corners; interocellar distance greater than distance between ocellus and eye; lateral margin of head between eye and antennal socket angulate to carinate; vestiture consisting of short decumbent hairs above, slightly longer decumbent and semierect hairs below. Antenna not longer than body length; first antennal segment surpassing apex of tylus, although not longer than head; relative length of segments in ascending order 3214; vestiture short, decumbent, with occasional short semierect or erect hairs. Rostrum not or barely reaching midcoxae, fourth rostral segment longest; relative length of segments in ascending order either 3124 or 3214.

Thorax: Pronotum slightly wider than long, relatively horizontal, punctate behind region of calli, posterior corners rounded, lateral margins carinate at least anteriorly, with varyingly developed middorsal carina, collar narrow, region of calli minutely granulate; pleural region minutely granulate; peritreme associated with scent gland orifice small, somewhat rounded, evaporative area restricted to base of peritreme. Scutellum longer than wide, usually minutely granulate. Corium punctate, extending apically along almost two-thirds length of membrane; vestiture short, usually not longer than width of puncture. Hind coxae not widely separated; hind femur only slightly incrassate, armed below in both sexes with small to medium sized spines, males with or without single long spine projecting from dorsal surface near apex; hind tibia straight, triangular in cross section, somewhat dilated basally, dorsal edge slightly to distinctly sulcate, armed with a double row of variable-sized spines located along apical two-thirds of shaft, ending with single spine located at apex; tibial setae dense, longer than spines; first tarsal segment somewhat longer than second and third combined.

Abdomen: Vestiture relatively short but with some longer erect hairs. Genital capsule with prominent process (attached anteriorly to aedeagal guide) arising middorsally from posterior margin; parameres flat, rounded apically, oriented horizontally as seen from behind.

Zulubius is one of four related genera found in Africa and Asia characterized by having one or two rows of prominent spines on the hind tibia. *Hypselopus* is the only one of the four genera having only a single row of large spines on the hind tibia. In addition, there is usually a small longitudinal membranous area near the apex of the hind femur in members of this genus. The species of *Hypselopus* are among the largest aldyids.

The genus *Nemausus* appears to be most similar to *Zulubius*; the females of the two are superficially difficult to separate. Members of these two genera can be separated by the length of the first tarsal segment in relation to the combined length of segments two and three. The first segment is longer than 2+3 in species of *Zulubius* and equal to 2+3 in *Nemausus*. Also, the cells of the corium tend to be more hyaline in *Nemausus*. The male genital capsules of species of the two genera are quite different from one another; a large dorsal process, lacking in *Nemausus*, arises from the posterior region of the genital capsule of *Zulubius*. The apices of the parameres of *Zulubius* are directed medially whereas they are directed dorsally in *Nemausus*.

The genital capsule of *Nariscus* is similar to that of *Zulubius* and the first tarsal segment is also longer than the length of two and three combined. The general body form differs somewhat from *Zulubius* and the sides of the head and thorax are covered with flat setae. The first antennal segment of *Zulubius* is longer than the third whereas it is shorter than the third in the case of *Nariscus*.

The North American genus *Stachyocnemus* also has prominent spines on the

hind tibia, the scent gland peritreme, however, is absent. It does not appear to be closely related to the preceding genera.

Two species of *Zulubius* are now known.

Zulubius maculatus (Thunberg) Figs 1, 3-5

Alydus maculatus Thunberg, 1822: 3 (orig. desc.)

Hypselopus linearis Stål, 1856: 29 (orig. desc.); Stål 1865: 103 (syn.)

Nemausus maculatus; Stål 1865: 103 (desc.)

Trichocnemus maculatus; Stål 1873: 95 (cat.); Lethierry et Severin 1894: 112 (cat.)

Zulubius maculatus; Bergroth 1894: 547 (note); Bergroth 1913: 162 (cat.); Schouteden 1938: 302-303 (desc., note); Schouteden 1948: 34 (note); Lindberg 1958: 40-41 (note, fig.).

This somewhat robust species is characterized by having the head wider than long and having the distance between ocelli not twice as great as distance between eye and ocellus. A large prominent spine arises from the dorsal apical region of the hind femur of the male.

General coloration brown and reddish brown with occasional black or fuscous coloration. Head reddish brown with limited black areas primarily on neck, area immediately around each ocellus and along inner posterior margin of eye; lighter beneath except for black midventral area and dark brown or reddish brown area running more or less between eye and antenna; antenna brown, occasionally reddish brown; rostrum brown with fuscous or black coloration most evident on third and fourth segments. Pronotum brown with area of calli and, occasionally, punctures reddish brown; pleural region of thorax dark reddish to reddish fuscous; sternum black; scutellum reddish to reddish brown with basal angles and apex lighter; corium brown, occasionally with reddish flecks on veins; membrane light fuscous; front and middle legs uniformly brown, often with reddish flecks, hind legs primarily reddish to reddish brown, sometimes tarsi slightly lighter. Dorsum of abdomen yellowish brown to brown with 3 or 4 light median spots, connexivum with fuscous to black spots on posterior half of posterior segments; lateral margins of underside of male yellow, shining, with 3 or 4 large midventral yellow spots, remainder primarily red or reddish brown, underside of female yellowish brown flecked with red.

Male (measurements taken from 8 specimens; average given first followed in parenthesis by ranges). Head: Length, 2.5 mm (2.3-2.6 mm); width, 2.8 mm (2.5-3.1 mm); interocular width, 1.6 mm (1.4-1.8 mm); distance between ocelli not twice as great as distance between eye and ocellus; carinate margin between eye and antennal socket usually slightly concave as seen from above. Length of antennal segment I, 1.9 mm (1.6-2.2 mm); II, 1.5 mm (1.3-1.8 mm); III, 1.3 mm (1.1-1.6 mm); IV, 2.8 mm (2.6-3.2 mm). Rostrum not reaching midcoxae; length of segment I, 0.9 mm (0.9-1.0 mm); II, 1.0 mm (0.9-1.0 mm); III, 0.8 mm (0.8-0.9 mm); IV, 1.5 mm (1.4-1.6 mm).

Thorax: Length of pronotum, 2.3 mm (1.9-2.8 mm); width, 2.7 mm (2.2-3.2 mm). Carination on lateral margin of pronotum most prominent anteriorly; area of calli clearly delimited from remainder of pronotum. Scutellar length, 1.2 mm (1.0-1.3 mm); width, 1.0 mm (0.8-1.2 mm). Hind femur with prominent posteriorly directed spine on dorsal surface near apex; hind tibia with prominent spine near base almost in apposition to spine on femur when tibia flexed against femur, two distinct rows of spines on apical two thirds.

Abdomen: Shining; second abdominal sternite sulcate midventrally; vestiture

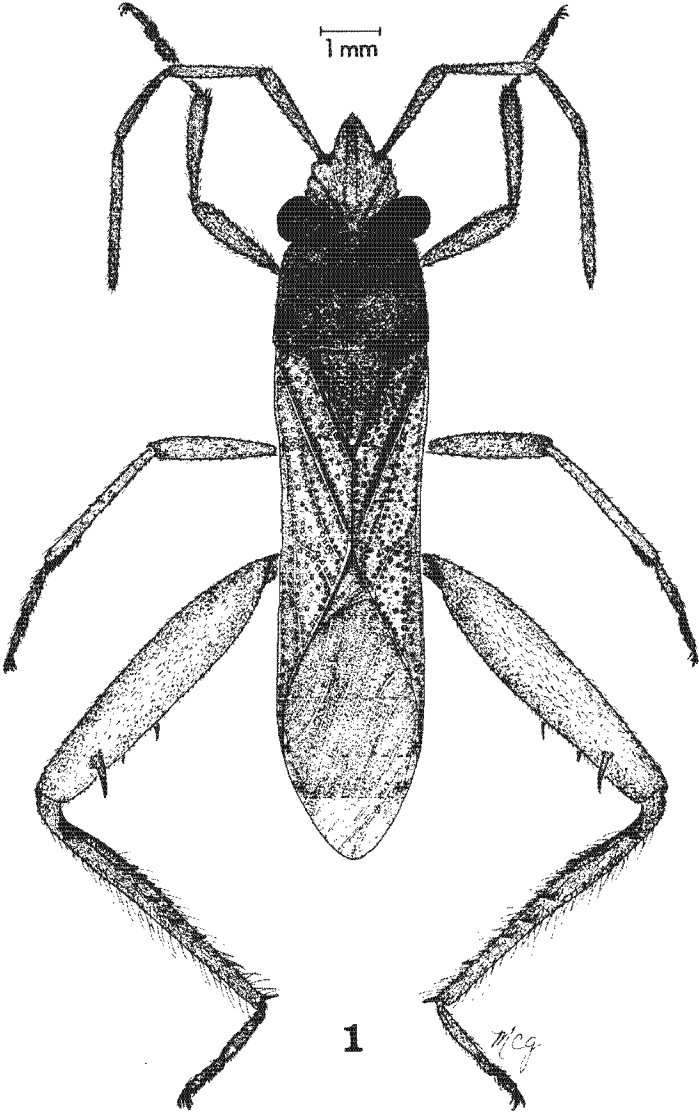


Fig. 1 *Zulubius maculatus* (Thunberg), male.

generally short, inconspicuous, with some erect or semierect hairs. Genital capsule with narrow process arising from posterior margin (Fig. 5); vestiture consisting of long hairs; aedeagus and parameres as illustrated (Figs 3, 4).

Total length, 13.6 mm (11.2–15.4 mm); width, 2.7 mm (2.4–3.2 mm).

Female (measurements taken from a single specimen). Head: Length, 2.6 mm; width, 2.8 mm; interocular width, 1.6 mm. Length of antennal segment I, 1.8 mm; II, 1.5 mm; III, 1.3 mm; IV, 2.8 mm. Length of rostral segment I, 1.0 mm; II, 1.0 mm; III, 0.9 mm; IV, 1.6 mm.

Thorax: Length of pronotum, 2.2 mm; width, 2.5 mm. Scutellar length, 1.0 mm; width, 0.9 mm.

Total length, 12.8 mm.

Similar to male in colour and form.

Type locality: Africa.

Type data: Holotype, male, on deposit in the Zoologiska Institutionen, Uppsala, Sweden.

Hypselopus linearis Stål. Type locality: Caffraria. Republic of South Africa.

Holotype, female, on deposit in the Naturhistoriska Riksmuseet, Stockholm, Sweden.

Distribution: Sudan and Uganda southward to South Africa.

MATERIAL EXAMINED (in addition to holotypes listed above). SOUTH AFRICA: Zeerust Dist., xi.15–25.1948; Rustenburg, xii.10.1952; Cape Province, 5 mi. S. W. Calitzdorp, Huisriver Pass, 33 21 CB, 18–21.xi.1972; S. Africa, Monale; Nwmbi., N. Tvl., 7.7.63; N. Transvaal, Tzaneen, 11–16 Dec. 1963; Mkuzi, Zululand, Dec. 1946; Matjiesfontein, 19–31.xii.1928; Cape Province, Mossel Bay, July, 1924; Natal, Weenen, i.1924; Estcourt, 11.96. SOUTH WEST AFRICA: Aus, 8–30.xi.1929; Okahandja, 2–8.iii.1928. ZIMBABWE: Bulawayo, 4.12.1921. SUDAN: Wad Medani, 12.11.17. The material is deposited in the J. A. Slater collection, Storrs, Connecticut, U.S.A. and in the collection of the Transvaal Museum, Pretoria.

The holotypes of both *Alydus maculatus* Thunberg and *Hypselopus linearis* Stål were made available for study and I conclude that Stål was correct in designating *H. linearis* a junior synonym of *Z. maculatus* (Thunberg) and do not concur with Schouteden (1938) that they probably represent separate species.

The specimens of the species available for study exhibit a fairly wide range of variation in color.

Zulubius acaciaphagus sp. nov., Figs 2, 6–8

This species is characterized by having the head longer than wide and having the distance between ocelli over 3 times as great as distance between eye and ocellus. The hind femur of the male lacks the large spine arising from the dorsal region.

General coloration reddish brown to brown, occasionally fuscous. Head brown and reddish brown above, yellowish brown beneath with reddish brown areas beneath eyes and antennae, midventral region black; basal three antennal segments brown to reddish brown, apical segment lighter; rostrum yellowish brown, apical region of segment IV black. Pronotum yellowish brown with punctures and region of calli reddish, lateral margin uniformly yellowish brown; pleural region of thorax primarily reddish brown becoming more yellowish brown ventrally; underside of thorax yellowish brown with rostral groove of prosternum and mesosternum black; scutellum mainly

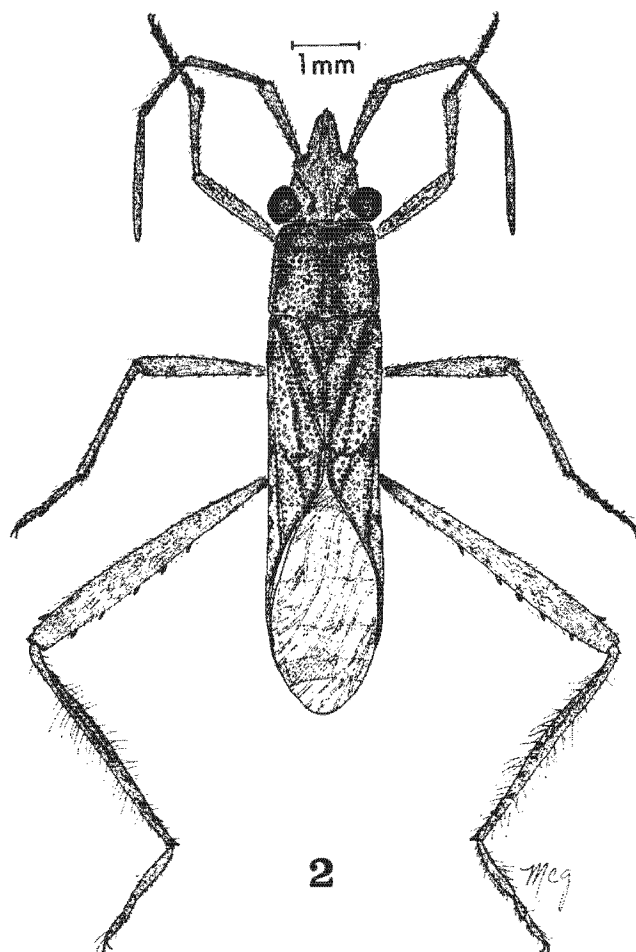


Fig. 2 *Zuluhius acaciaphagus* sp. nov., male.

reddish brown, light at basal corners and at apex; corium of wing brown with reddish blotches or flecks on veins and along costal margin; membrane light fuscous. Legs yellowish brown to brown with reddish or reddish brown areas. Abdomen above and below yellowish brown with reddish brown areas laterally on underside, occasionally with narrow red line or partial line running midventrally. Darker specimens usually with reddish brown coloration more intense; fuscous coloration occurring on head near ocelli, eyes, vertex and frons, on thoracic pleura as spots, on metasternum except along midventral line and lateral margins; margin of connexivum with dark coloration on posterior half of segment.

MALE (measurements taken from 32 specimens; those of holotype given first followed in parenthesis by average and ranges). Head: Length, 2.3 mm (2.2 mm, 2.1–2.5 mm); width, 2.2 mm (2.1 mm, 1.9–2.3 mm); interocular width, 1.2 mm (1.2 mm, 1.1–1.4 mm); distance between ocelli over 3 times as great as distance between eye and ocellus; carinate margin between eye and antennal socket usually straight as seen from above. Length of antennal segment I, 1.9 mm (1.8 mm, 1.5–2.1 mm); II, 1.4 mm (1.3 mm, 1.1–1.6 mm); III, 1.2 mm (1.2 mm, 1.0–1.4 mm); IV, 2.3 mm (2.4 mm, 2.1–2.7 mm). Rostrum sometimes reaching midcoxae; length of segment I, 0.9 mm (0.9 mm, 0.8–1.0 mm); II, 1.0 mm (1.0 mm, 0.9–1.0 mm); III, 0.8 mm (0.8 mm, 0.7–0.9 mm); IV, 1.3 mm (1.3 mm, 1.1–1.4 mm).

Thorax: Length of pronotum, 2.1 mm (2.0 mm, 1.7–2.2 mm); width, 2.3 mm (2.1 mm, 1.9–2.5 mm). Lateral margin of pronotum evenly carinate along margin; area of calli not clearly delimited from remainder of pronotum by groove. Scutellum length, 1.1 mm (1.1 mm, 0.9–1.2 mm); width, 0.9 mm (0.9 mm, 0.8–1.0 mm). Hind femur lacking a posteriorly-directed spine near apex; usually with one or more small dentate processes located dorsally near apex; hind tibia with two rows of spines although one row not always prominent or straight.

Abdomen: Not shining, second abdominal sternite not particularly sulcate midventrally; vestiture short with some erect or semierect hairs. Genital capsule with process arising from posterior margin (Fig. 7); vestiture with long hairs; aedeagus and parameres as illustrated, (Fig. 6, 8).

Total length, 12.3 mm (11.4 mm, 10.1–12.9 mm); width, 2.4 mm (2.2 mm, 1.9–2.5 mm).

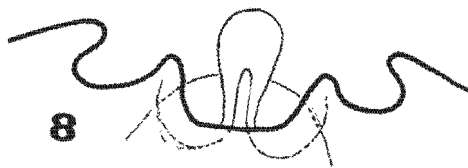
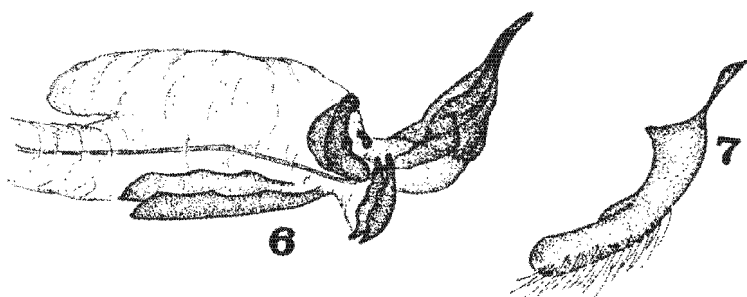
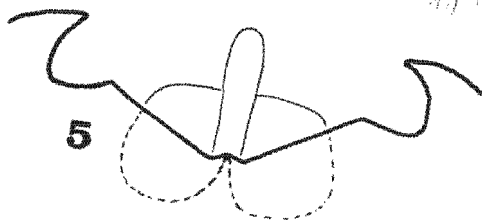
FEMALE (measurements taken from 25 specimens; those of allotype given first followed in parenthesis by average and ranges). Head: Length, 2.6 mm (2.4 mm, 2.2–2.6 mm); width, 2.3 mm (2.2 mm, 2.0–2.4 mm); interocular width, 1.4 mm (1.3 mm, 1.2–1.4 mm). Length of antennal segment I, 1.7 mm (1.7 mm, 1.5–1.9 mm); II, 1.3 mm (1.3 mm, 1.1–1.5 mm); III, 1.2 mm (1.2 mm, 1.1–1.4 mm); IV, 2.3 mm (2.4 mm, 2.1–2.6 mm). Length of rostral segment I, 1.0 mm (1.0 mm, 0.9–1.1 mm); II, 1.1 mm (1.0 mm, 1.0–1.1 mm); III, 0.9 mm (0.9 mm, 0.8–1.0 mm); IV, 1.4 mm (1.3 mm, 1.2–1.4 mm).

Thorax: Length of pronotum, 2.1 mm (2.1 mm, 1.7–2.4 mm); width, 2.4 mm (2.3 mm, 2.0–2.5 mm). Scutellum length, 1.2 mm (1.1 mm, 0.9–1.2 mm); width, 1.0 mm (1.0 mm, 0.8–1.1 mm).

Total length, 12.6 mm (12.3 mm, 10.3–13.4 mm); width, 2.3 mm (2.5 mm, 2.1–2.8 mm).

Similar to male in colour and form.

MATERIAL EXAMINED. SOUTH AFRICA: Holotype, male, Cape Province, Cape Town, 8.iii.1978, S. Naser, AcHa 777, on *Acacia cyclops* (feeding on seeds). Deposited in the National Collection of Insects, Pretoria. Allotype, female, Cape Province, Stellenbosch, 2.iii.1978, S. Naser, AcHa 799, on *Acacia cyclops* (feeding on seeds). Deposited in the National Collection of Insects, Pretoria. Paratypes, 5 males, 4 females, same data as holotype; 3 males, 5 females, same data as allotype; 2 males, 2 females, Cape Province, Blaauw Klippen (near Stellenbosch), 15.iii.1978, S. Naser, AcHa 822, coll. as nymphs on seeds of *Acacia mearmsii*; 6 males, 7 females, Cape Province, Stellenbosch, 29.iv.1978, S. Naser, AcHa 842, on *Acacia cyclops*; 5 males, 3 females, Cape Prov-



ince, Steenbras River Mouth, 12 and 27.iii.1978, S. Nesar, AcHa 779, on *Acacia cyclops* (feeding on seeds); 14 males, 3 females, Cape Province, Hout Bay, 4.v.1978, S. Nesar, AcHa 845, on *Acacia cyclops*; 2 males, 4 females, Cape Province, Stellenbosch, 23.ii and 3.iii.1978, S. Nesar, AcHa 776, on *Acacia melanoxylon* (feeding on seeds); 4 males, 2 females, Cape Province, Bokbaai (near Mamre), 11.xii.1977, S. Nesar, O. Nesar & S. R. Fulger, AcHa 720, on pods of *Acacia cyclops*; male, female, Cape Province, Gordons Bay, 5.iii.1978, S. Nesar, AcHa 778, on *Acacia cyclops* (feeding on seeds); male, 3 females, Cape Province, Faure, 13.i.1978, S. Nesar, AcHa 734, coll. as nymphs on ripe pods of *A. cyclops*; 5 males, 9 females, Cape Province, Stellenbosch, v.1976, AcHa 375(b), A. J. Gordon, coll. as nymphs on pods of *Acacia cyclops*; 6 females, Cape Town, May 1975, J. A. Gordon, on *Acacia cyclops* Cunn. seed pods, AcHa 374; male, 2 females, Stellenbosch, May 1975, A. J. Gordon, on *Acacia cyclops* Cunn. seed pods, AcHa 375; male, Cape Province, Stellenbosch, v.1976, AcHa 375(c), A. J. Gordon, on pods of *Acacia cyclops*; 3 males, Transvaal, Kruger Nat. Park, Punda Milia, 22 31 CA, 26-28.xi.1973, J. van Reenen; male, Transvaal, Kruger Nat. Park, Shingwidzi, 23 31 AB, 1.xii.1973, J. van Reenen; 2 males, Zululand, Eshowe, ix-25-30, 1949, A. L. Capener; female, Transvaal, Rustenburg, 7-14 Nov. 1967, A. L. Capener. SWAZILAND: male, 18.1.69; male, ex lawn, 1965. TANZANIA: Merogoro, H. W. Hurlbutt. Paratypes deposited in National Collection of Insects, Pretoria; the Transvaal Museum, Pretoria; the collection of the Department of Entomology, Texas A & M University, College Station, Texas, USA; the J. A. Slater collection, Storrs, Connecticut, USA.

Distribution: South Africa, Swaziland and Tanzania.

Host plants: *Acacia cyclops*, *Acacia mearmsii* and *Acacia melanoxylon*.

Zulubius acaciaphagus and *Z. maculatus*, the previously described member of the genus, are rather easily separated from one another. As stated in the characterization, the head length is greater than the width in the case of *Z. acaciaphagus* whereas the opposite is true for *Z. maculatus*. The distance between the ocelli is over 3 times as great as the distance between the eye and the ocellus in *Z. acaciaphagus* whereas the distance between the ocelli is not twice as great as the distance between the eye and the ocellus in the case of *Z. maculatus*. Usually the carination on the head margin between the eye and the antennal socket is straight as seen from above for *Z. acaciaphagus* and at least slightly concave on *Z. maculatus*. The pronotum is more flattened as seen from the side than that of *Z. maculatus*. The corium frequently has red or reddish flecks of coloration on the veins whereas this is not usually true for *Z. maculatus*. The males can be separated by genitalic characters, however the presence of the large posteriorly-directed spine on the dorsal part of the apex of the femur quickly separates it from *Z. acaciaphagus* which lacks this spine.

The members of this species exhibit a wide degree of variation in size, colour and measurement ratios. The fact that some of the specimens were apparently reared may have accentuated some of this variation. It required some degree of study to convince the author that only one species was represented.

Figs 3-8 *Zulubius* spp. 3-5. *Z. maculatus* (Thunberg). 3. Aedeagus. 4. Paramere. 5. Ventral margin of genital capsule. 6-8. *Z. acaciaphagus* sp. nov. 6. Aedeagus. 7. Paramere. 8. Ventral margin of genital capsule.

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REFERENCES

- BERGROTH, E. 1894. Rhynchota Aethiopica. *Annales de la Société Entomologique de Belgique* 38: 535-547.
- BERGROTH, E. 1913. Supplementum catalogi Heteropterorum Bruxellensis. II. *Memoirs de la Société Entomologique de Belgique* 22: 125-183.
- LETHIERRY, L. & G. SEVERIN. 1894. *Catalog general des Hemipteres*. Vol. 2 Bruxelles, F. Hayez.
- LINDBERG, H. 1958. Hemiptera Insularum Caboverdensium; Systematik, Ökologie and Verbreitung der Heteropteren und Cicadinen der Kapverdischen Inseln. *Commentationes Biologicae* 19(1): 1-246.
- SCHOUTEDEN, H. 1938. Catalogues raisonnés de la faune entomologique de Congo Belge. *du Musée du Congo Belge Annales series 3* (2), 1:221-308.
- SCHOUTEDEN, H. 1948. Exploration du Parc National Albert. Mission G. F. De Witte (1933-1935). Coreidae (Hemiptera Heteroptera) 56: 1-42.
- STÅL, C. 1856. Hemiptera fran kafferlandet. *Forhandlingar Svenska Vetenskaps-Akademien Ofversigt* 12: 27-46.
- STÅL, C. 1865. *Hemiptera Africana*. Vol. 2 Holmiae, ex Officina Norstedtiana.
- STÅL, C. 1873. Enumeratio hemipterorum. Part 3. *Kongliga Svenska Vetenskaps-Akademien Handlingar* 11: 1-163.
- THUNBERG, C. P. 1822. *Dissertatio entomologica de Hemipteris rostratis Capensibus*. Upsaliae, Academia Typographica.

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